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ABSTRACT

This report provides employment by industry for 1960 and 1969, with projections for 1975. The second part of the report presents guidelines for developing state and area employment estimates for 1960 and 1975. The report concludes with a discussion of labor supply and demand and their interrelationship. This supplement presents revised employment projections superseding the data in earlier volumes, which are available as ED 032 398-032 401. (BH)

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TOMORROW'S MANPOWER NEEDS

Supplement No. 2
New and Revised National Industry
Projections and Procedures for Adjusting
Wage and Salary Employment to Total Employment

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U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

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National manpower projections and a guide to their use as a tool in developing State and area manpower projections

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New and Revised National Industry
Projections and Procedures for Adjusting
Wage and Salary Employment to Total Employment

1970

U. S. DEPARTMENT OF LABOR
J. D. Hodgson, Secretary

BUREAU OF LABOR STATISTICS
Geoffrey H. Moore, Commissioner

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Tomorrow's Manpower Needs

Introduction

Supplement No. 2 to Tomorrow's Manpower Needs, (Bulletin 1606)[1] is the second of a series of reports that will be released periodically for dissemination of new and revised national manpower data, research results, and for sharing the experience of different agencies in developing State and local projections. Supplement No. 2 presents revised 1975 industry employment projections and a discussion of procedures for adjusting State wage and salary employment to the total employment concept. Supplement No. 1 issued on April 9, 1970, presented revised employment projections to 1975 for the construction industry and the individual construction trades.

Section 1 of this report presents the Bureau's latest wage and salary and total employment projections to 1975 by industry, for use by State and local agencies in developing projections of manpower requirements. (See tables 1 and 2.) These data supersede those published in Tomorrow's Manpower Needs, Bulletin 1606, volume IV, appendixes B and C. Section II of the report presents a set of guidelines for developing total employment estimates covering all types of workers (self-employed, unpaid family, and government workers) for each BLS matrix industry for the base year (1960) and projected target year (1975). These procedures have proven to be a helpful guide to a number of States that have undertaken the development of State manpower projections following the procedures outlined in Bulletin 1606. Section III discusses aggregate labor demand and supply and the relationship between the "work force" (jobs) and the "labor force" (persons) and illustrates how these differing concepts may be examined by local analysts in developing State and local manpower projections.

[1] Tomorrow's Manpower Needs: National Manpower Projections and a Guide to Their Use as a Tool in Developing State and Area Manpower Projections, U.S. Department of Labor, Bureau of Labor Statistics, volumes I-IV, Bulletin 1606 (1969).

Section I. Revised 1975 Wage and Salary Employment and Total Employment Projections by Industry

This section presents the latest BLS industry employment projections to 1975 for use by State and local agencies preparing manpower projections through the procedures outlined in volume I of Tomorrow's Manpower Needs, Bulletin 1606. These new and revised national projections supersede all previous industry projections published by the Bureau, and are consistent with the soon to be released manpower projections to 1980. [2]

Revised wage and salary employment projections to 1975 are presented in table 1 and supersede those published earlier in appendix B, volume IV of Tomorrow's Manpower Needs, Bulletin 1606. These projections cover about 250 individual industries, an expansion of nearly 50 over those previously published by the Bureau. Table 2 presents revised 1960 and 1975 projections of total industry employment (wage and salary employment plus self-employed, unpaid family workers, and government workers) for each of the 116 national industries included in the BLS industry-occupational employment matrix. These data have been adjusted to the current labor force concept (persons 16 years of age and over) and supersede those published in volume IV, appendix C of Tomorrow's Manpower Needs, Bulletin 1606.

[2] In the spring of 1971, volume IV of Tomorrow's Manpower Needs, Bulletin 1606, will be completely updated to 1980.

Table 1. National nonagricultural employment of wage and salary workers, by industry, 1969 and projected 1975

SIC code	Industry	1969	1975
	Total nonagricultural employment	70,141.0	78,400.0
B	Mining	628.0	575.0
10	Metal mining	92.2	85.0
101	Iron ores	25.4	25.0
102	Copper ores	37.2	35.0
103–6, 8, 9	Lead, zinc, and all other metal ores	[1] 29.6	25.0
11, 12	Coal mining	136.1	105.0
11	Anthracite mining	[1] 6.3	5.0
12	Bituminous and lignite	129.8	100.0
13	Crude petroleum and natural gas	281.6	260.0
131, 2	Crude petroleum and natural gas fields	144.3	140.0
138	Oil and gas field services	137.3	120.0
14	Quarrying and nonmetallic mining	118.2	125.0
C	Contract construction	3,411.0	4,200.0
15	General building contractors	1,012.5	1,150.0
16	Heavy construction	741.7	850.0
17	Special trade contractors	1,657.2	2,200.0
D	Manufacturing	20,121.0	20,910.0
19, 24, 25, 32–39	Durable goods	11,880.0	12,320.0
19	Ordnance and accessories	328.5	260.0
194	Sighting and fire control equipment	[2] 18.1	10.0
19 except 194	Other ordnance and accessories	[1] 310.4	250.0
24	Lumber and wood products, except furniture	600.2	590.0
241	Logging camps and logging contractors	78.4	75.0
242	Sawmills and planning mills	231.8	200.0
243	Millwork, plywood, and related products	165.2	190.0
244	Wooden containers	37.5	30.0
249	Miscellaneous wood products	87.3	95.0
25	Furniture and fixtures	492.3	560.0
251	Household furniture	346.9	385.0
252–4, 9	All other furniture and fixtures	145.3	175.0
32	Stone, clay, and glass products	661.2	725.0
321–3	Glass and glass products	[1] 187.5	200.0
324	Cement, hydraulic	35.1	30.0
325	Structural clay products	64.5	70.0
326	Pottery and related products	45.5	40.0
327	Concrete, gypsum, and plaster products	187.8	240.0
328, 9	Other stone and mineral products	140.8	145.0
33	Primary metal industries	1,350.2	1,320.0
331	Blast furnaces and basic steel products	643.9	610.0
332	Iron and steel foundries	233.7	235.0
336	Nonferrous foundries	91.8	105.0
333–5, 9	All other primary metal industries	380.9	370.0
34	Fabricated metal products	1,454.3	1,510.0
341	Metal cans	68.5	65.0
342	Cutlery, handtools, and general hardware	171.8	170.0
344	Fabricated structural metal products	429.9	460.0
343, 5–9	All other fabricated metal products	784.1	815.0
35	Machinery, except electrical	2,006.5	2,230.0
352	Farm machinery and equipment	131.9	160.0
354	Metal working machinery and equipment	343.6	365.0
355	Special industry equipment	200.2	225.0
357	Office, computing, and accounting machines	254.3	335.0
351, 3, 6, 8, 9	All other machinery, except electrical	1,076.4	1,145.0
36	Electrical machinery, equipment, and supplies	2,037.5	2,150.0
361	Electrical transmission and distribution equipment	212.4	225.0

See footnotes at end of table.

Table 1. National nonagricultural employment of wage and salary workers, by industry, 1969 and projected 1975—Continued

SIC code	Industry	1969	1975
3611	Electrical measuring instruments and test equipment	72.0	80.0
3612	Power, distribution, and specialty transformers	57.6	60.0
3613	Switchgear and switchboard apparatus	82.8	85.0
362	Electrical industrial apparatus	217.2	230.0
3621	Motors and generators	117.8	125.0
3622	Industrial controls	60.5	65.0
3624	Carbon and graphite products	[2]13.9	15.0
3623, 9	Welding apparatus; electrical industrial apparatus, n.e.c	[2]25.3	25.0
363	Household appliances	182.2	195.0
3632	Household refrigerator and home and farm freezers	59.7	65.0
3633	Household laundry equipment	25.7	30.0
3634	Electric housewares and fan	43.5	50.0
3636	Sewing machines	[2]8.6	10.0
3631, 5, 9	Household cooking equipment; household vacuum cleaners; household appliance, n.e.c	[2]46.5	40.0
364	Electric lighting and wiring equipment	209.4	225.0
3641	Electric lamps	39.3	40.0
3642	Lighting fixtures current-carrying wiring devices	66.6	70.0
3643, 4	Noncurrent-carrying wiring devices	103.5	115.0
365	Radio and television receiving sets, except communication types	154.6	170.0
366	Communication equipment	525.1	540.0
3661	Telephone and telegraph apparatus	141.1	130.0
3662	Radio and television transmitting, signaling, and detection equipment and apparatus	384.0	410.0
367	Electronic components and accessories	410.1	440.0
3671–3	Radio and television receiving type electronic tubes, except cathoderay transmitting, industrial, and special purpose electronic tubes	70.4	65.0
3674, 9	Semiconductors and related devices electronic and accessories, n.e.c	339.7	375.0
369	Miscellaneous electrical machinery, equipment and supplies	126.5	125.0
3691	Storage batteries	[2]23.5	30.0
3692	Primary batteries, dry and wet	[2]13.3	15.0
3694	Electrical equipment for internal combustion engines	68.4	65.0
3693, 9	Radiographic X-ray, and other X-ray apparatus and tubes; electrotherapeutic apparatus electrical machinery, equipment and supplies, n.e.c	[2]20.5	15.0
37	Transportation equipment	2,035.4	2,000.0
371	Motor vehicles and equipment	900.8	890.0
372	Aircraft and parts	805.4	775.0
3721	Aircraft	479.0	425.0
3722	Aircraft engines and engine parts	196.5	215.0
3723, 9	Other aircraft parts and equipment	130.0	135.0
373	Ship and boat building and repairing	187.0	195.0
3731	Shipbuilding and repairing	142.9	155.0
3732	Boat building and repairing	44.1	40.0
374	Railroad equipment	52.2	50.0
375, 9	All other transportation equipment	89.9	90.0
38	Instruments and related products	470.0	510.0
386	Photographic equipment and supplies	114.1	130.0
387	Watches and clocks	36.4	40.0
381–5	All other instruments and related products	319.6	340.0
39	Miscellaneous manufacturing industries	443.8	465.0
391	Jewelry, silverware and plated ware	51.7	50.0
394	Toys, amusement, and sporting goods	126.1	145.0
396	Costume jewelry, buttons, manufacturing	61.7	60.0
393, 5, 8, 9	All other miscellaneous manufacturing	204.3	210.0

See footnotes at end of table.

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Table 1. National nonagricultural employment of wage and salary workers, by industry, 1969 and projected 1975—Continued

SIC code	Industry	1969	1975
20–23, 26–31	Nondurable goods manufacturing	8,241.0	8,590.0
20	Food and kindred products	1,793.6	1,765.0
201	Meat products	337.9	330.0
202	Dairy products	252.5	235.0
203	Canned and preserved food, except meats	282.6	290.0
204	Grain mill products	136.6	130.0
205	Bakery products	275.4	265.0
206	Sugar	40.4	40.0
207	Confectionery and related products	85.3	75.0
208	Beverages	238.0	255.0
209	Miscellaneous food and kindred products	144.9	145.0
21	Tobacco manufactures	80.6	70.0
211	Cigarettes	40.7	35.0
212	Cigars	19.5	15.0
213, 4	All other tobacco manufactures	[1]20.4	20.0
22	Textile mill products	987.2	950.0
225	Knitting	245.1	250.0
226	Finishing textiles, except knitting	83.9	80.0
228	Yarn and thread	121.8	110.0
221–4, 7, 9	All other textile mill products	536.5	510.0
23	Apparel and related products	1,417.5	1,580.0
231	Men's and boys' suits and coats	136.7	145.0
232	Men's and boys' furnishings	372.6	430.0
233	Women's, misses' and juniors' outerwear	430.5	480.0
234	Women's and children's undergarments	125.4	130.0
236	Girls' and children's outerwear	79.6	85.0
235, 7–9	All other apparel and related products	272.9	310.0
26	Paper and allied products	716.2	755.0
264	Converted paper and paperboard products	186.6	220.0
265	Paperboard containers and boxes	231.8	235.0
261–3, 6	All other paper and allied products	297.8	300.0
27	Printing, publishing, and allied products	1,086.5	1,165.0
271	Newspaper publishing and printing	365.7	360.0
272	Periodical publishing and printing	78.5	75.0
273	Books	96.5	130.0
275	Commercial printing	346.1	370.0
274, 6–9	All other printing and publishing	199.6	230.0
28	Chemicals and allied products	1,049.1	1,115.0
281	Industrial inorganic and organic chemicals	314.2	330.0
2812	Alkalies and chlorine	25.7	25.0
2813, 5, 6	Industrial gases, crudes, and pigments	[1]67.6	75.0
2818	Industrial organic chemicals, n.e.c	124.2	130.0
2819	Industrial inorganic chemicals, n.e.c	96.7	100.0
282	Plastics materials and synthetic resins, synthetic rubber, synthetic and other man-made fibers, except glass	224.4	250.0
2821	Plastics materials, synthetic resins, and (nonvulcanizable elastomers)	97.3	105.0
2822	Synthetic rubber (vulcanizable elastomers)	[2]13.1	15.0
2823, 4	Cellulosic man-made fibers, except cellulosic	114.0	130.0
283	Drugs	142.6	165.0
2831, 3	Biological products medicinal chemicals and botanical products	[2]30.7	35.0
2834	Pharmaceutical preparations	111.8	130.0
284	Soap, detergents, and cleaning preparations; perfumes, cosmetics, and other toilet preparations	122.9	135.0
2841	Soap, and other detergents, except specialty cleaners	40.1	45.0
2842, 3	Specialty cleaning, polishing, and sanitation preparations, except soap and detergents; surface active agents, finishing agents, finishing agents sulfonated oils and assistants	[2]30.2	35.0
2844	Perfumes, cosmetics, and the other toilet products	51.7	55.0

See footnotes at end of table.

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Table 1. National nonagricultural employment of wage and salary workers, by industry, 1969 and projected 1975—Continued

SIC code	Industry	1969	1975
285	Paints, varnishes, lacquers, enamels, and allied products	71.5	75.0
287	Agricultural chemicals	55.3	65.0
2871, 2	Fertilizers, complete and mixing only	38.4	45.0
2879	Agricultural pesticides, and other agricultural chemicals, n.e.c	[2]16.5	20.0
286, 9	Gum and wood and other chemicals	118.2	95.0
286	Gum and wood chemicals	[2]7.2	5.0
289	Miscellaneous chemical products	[2]113.3	90.0
2892	Explosives	[2]47.9	30.0
2891, 3, 5, 9	Other chemical preparations	[2]65.4	60.0
29	Petroleum refining and related industries	183.8	170.0
291	Petroleum refining	146.3	130.0
295, 9	All other petroleum and coal products	37.5	40.0
30	Rubber and miscellaneous plastics products	581.0	675.0
301	Tires and innertubes	118.2	110.0
302, 3, 6	Other rubber products	183.4	200.0
307	Miscellaneous plastics products	279.4	365.0
31	Leather and leather products	345.2	345.0
311	Leather tanning and finishing	29.1	30.0
314	Footwear, except rubber	226.8	225.0
312, 3, 5–7, 9	All other leather products	89.2	90.0
313	Footwear cut stock	[2]13.8	15.0
E	Transportation, communication, and public utilities	4,448.0	4,560.0
40–2, 44–7	Transportation	[1]2,722.8	2,805.0
40	Railroad transportation	645.3	570.0
41	Local and interurban passenger transportation	282.5	285.0
411	Local and suburban passenger transportation	80.3	85.0
412	Taxicabs	109.7	105.0
413	Intercity and rural highway passenger transportation	43.0	50.0
414, 5, 7	Other services allied to highway transportation	[1]49.2	45.0
42	Motor freight transportation and warehousing	1,087.9	1,165.0
421, 3	Trucking	1,003.5	1,075.0
422	Warehousing	84.4	90.0
45	Transportation by air	350.5	410.0
451, 2	Air transportation, common carrier	316.7	375.0
458	Fixed facilities and services related to air transportation	[1]33.8	35.0
46	Pipeline transportation	18.6	15.0
44, 7	Water transportation and transportation services, n.e.c	338.4	360.0
44	Water transportation	234.5	240.0
47	Transportation services, n.e.c	103.8	120.0
48	Communication	1,061.6	1,070.0
481	Telephone communication	882.5	885.0
482	Telegraph communication	32.2	30.0
483	Radio and television broadcasting	130.9	145.0
489	Communication services, n.e.c	[1]16.0	10.0
49	Electric, gas, and sanitary services	663.6	685.0
491	Electric companies and systems	275.0	280.0
492	Gas companies and systems	158.1	160.0
493	Combined utility systems	183.0	185.0
494–7	Water, steam, and sanitary systems	47.4	60.0
F	Wholesale and retail trade	14,644.0	16,065.0
50	Wholesale trade	3,767.0	4,175.0
501	Motor vehicle and automotive equipment	305.8	355.0
502	Drugs, chemicals, and allied products	233.7	250.0
503	Dry goods and apparel	149.4	170.0
504	Groceries and related products	549.7	545.0
506, 7	Electrical goods, hardware, and plumbing and heating equipment	477.1	555.0
508	Machinery, equipment, and supplies	738.5	880.0
505, 9	Farm products, raw materials, and miscellaneous	[1]1,312.8	1,420.0

See footnotes at end of table.

Table 1. National nonagricultural employment of wage and salary workers, by industry, 1969 and projected 1975—Continued

SIC code	Industry	1969	1975
52–59	Retail trade	10,876.0	11,890.0
52	Building materials and hardware	547.6	535.0
53	General merchandise stores	2,296.9	2,532.0
533	Limited price variety stores	330.7	325.0
531, 2, 4, 5, 9	Department stores, mail order houses, merchandise vending machine operators, direct selling organizations, and miscellaneous general merchandise stores	[1]1,966.2	2,200.0
54	Food stores	1,692.3	1,865.0
55	Auto dealers and service stations	1,595.4	1,830.0
551, 2, 553, 9	Motor vehicle and other vehicle accessory dealers	994.7	1,160.0
554	Gasoline service stations	600.7	670.0
56	Apparel and accessories stores	702.6	715.0
57	Furniture and appliance stores	442.6	470.0
58	Eating and drinking places	2,409.7	2,650.0
59	Miscellaneous retail stores	1,189.1	1,300.0
591	Drug stores	432.6	500.0
592–9	Farm and general supply stores and fuel and ice dealers and other miscellaneous retail stores	[1]756.5	800.0
G	Finance, insurance, and real estate	3,559.0	3,830.0
60, 1, 2	Finance	1,555.8	1,705.0
60	Banking	981.4	1,070.0
61	Credit agencies other than banks	360.6	440.0
62	Security and commodity brokers, dealers, exchanges, and services	213.8	195.0
63, 4	Insurance carriers and insurance agents, brokers, and services	1,289.9	1,375.0
63	Insurance carriers	1,020.1	1,085.0
64	Insurance agents, brokers, and services	269.8	290.0
65–7	Real estate, combinations of real estate, insurance, loan law offices, and holding and other investment companies	713.1	750.0
65	Real estate	632.6	670.0
66-7	Combinations of real estate, insurance, loans, law offices, and holding and other investment companies	80.5	80.0
66	Combined real estate, insurance, etc.	[2]42.3	40.0
67	Holding and other investment companies	[2]37.3	40.0
H, 99, 07–09	Services and miscellaneous	11,103.0	13,460.0
70	Hotels, rooming houses, camps, and other lodging places	729.6	875.0
701	Hotels, tourist courts, and motels	600.0	795.0
702–4	Other lodging places	[1]129.6	80.0
72	Personal services	1,025.2	1,230.0
721	Laundries, laundry services, and cleaning and dyeing plants	533.9	605.0
722	Photographic studios	41.6	45.0
723–7, 9	Other personal services	[2]446.6	580.0
73	Miscellaneous business services	1,487.9	2,095.0
731	Advertising	118.9	125.0
732	Consumer credit reporting and collection agencies	74.0	90.0
734	Services to buildings	258.8	405.0
733, 5, 6, 9	Other business services	[2]1,009.3	1,475.0
75	Automobile repair, automobile services, and garages	[2]356.1	430.0
751	Automobile rentals, without drivers	[2]54.1	70.0
752	Automobile parking	[2]40.3	40.0
753, 4	Automobile repair and services	[2]261.7	320.0
76	Miscellaneous repair services	183.5	205.0
762	Electrical repair shops	[2]64.1	60.0
763, 4, 9	Other miscellaneous repair services	[2]117.4	145.0
78	Motion pictures	208.0	215.0
781	Motion picture filming and distribution	51.1	65.0
782, 3	Motion picture theaters and services	156.9	150.0
79	Amusement and recreation services, except motion pictures	[2]404.0	540.0
791–3	Bowling and other indoor amusements and recreation	[2]169.7	220.0
794	Miscellaneous amusements and recreation services	[2]234.3	320.0

See footnotes at end of table.

Table 1. National nonagricultural employment of wage and salary workers, by industry, 1969 and projected 1975—Continued

SIC code	Industry	1969	1975
80	Medical and other health services	2,855.7	3,520.0
806	Hospitals	1,767.0	2,110.0
801–4, 7, 9	Other health services	[1] 1,088.7	1,410.0
81	Legal services	221.2	275.0
82	Educational services	1,108.7	1,330.0
821	Elementary and secondary schools (private)	375.2	420.0
822	Higher educational services (private)	640.1	780.0
823, 4, 9	Other educational services (private)	[1] 93.4	130.0
84	Museums, art galleries, botanical and zoological gardens	[2] 16.3	25.0
86	Nonprofit membership organizations	[2] 1,649.2	1,745.0
861–5, 9	Nonprofit membership organizations, except welfare and religion organizations	[2] 440.5	415.0
866, 7	Welfare and religion organizations	[2] 1,208.7	1,330.0
89	Miscellaneous services	612.7	760.0
891	Engineering and architectural services	299.5	410.0
892	Nonprofit research organizations	94.5	110.0
893	Accounting, auditing, and bookkeeping	[2] 191.6	210.0
899	Services, n.e.c	[2] 20.9	30.0
07–09	Agricultural services forestry, and fisheries	[2] 157.9	200.0
99	Nonclassifiable establishments	[2] 23.5	15.0
I	Government	12,227.0	14,800.0
91	Federal government	2,757.0	2,890.0
	Executive	2,721.7	2,850.0
	Department of Defense	1,125.5	1,000.0
	Post Office Department	732.4	850.0
	Other agencies	863.8	1,000.0
	Legislative	29.0	30.0
	Judicial	6.7	10.0
92, 3	State and local government	9,469.0	11,910.0
92	State	2,538.5	3,065.0
	State education	1,043.8	1,215.0
	Other State government	1,494.6	1,850.0
93	Local	6,930.7	8,845.0
	Local education	3,882.2	5,185.0
	Other local government	3,048.6	3,660.0

1 Annual average data are not published for this industry classification. The figure was obtained by subtracting the sum of employment in individual industries for which data are published from total published employment in the major industry group.

2 Benchmark data for March 1969.

NOTE: Sum of individual items may not add to totals either because of rounding or because data are March benchmark, which may be higher or lower than average employment.

Table 2. Total national employment by industry, 1960 and projected 1975

(In thousands)

SIC code	Industry	[1] 1960	[1] 1975
	Industry, total	65,778	87,390
A	Agriculture, forestry, and fisheries	5,591	3,360
01, 02, 07 except 0713	Agriculture	5,502	3,250
08	Forestry	46	65
09	Fisheries	43	45
B	Mining	720	585
10	Metal mining	94	85
11, 12	Coal mining	185	105
13	Crude petroleum and natural gas	317	265
14	Quarrying and nonmetallic mining	124	130
C (15–17)	Construction industry [2]	4,056	5,600
D	Manufacturing	17,144	21,330
19, 24, 25, 32–39	Durable goods manufacturing	9,701	12,665
24	Lumber and wood products, excluding furniture	684	655
241	Logging camps and contractors	127	125
242, 244, 249	Sawmills, millwork, and miscellaneous wood products	557	530
25	Furniture and fixtures	393	570
32	Stone, clay, and glass products	611	730
321–3	Glass and glass products	156	200
324–7	Cement, concrete, and plaster	208	275
325	Structural clay products	77	70
326	Pottery and related products	47	40
328, 9	Miscellaneous nonmetallic mineral and stone products	123	145
33	Primary metals industries	1,224	1,320
3312, 3	Blast furnaces and steel works	586	545
3315–7, 332, 3391, 9	Other primary metals industries	316	370
333–6, 3392	Primary nonferrous metals	322	405
34,19,except 194	Fabricated metal products	1,356	1,825
35	Machinery, except electrical	1,491	2,255
352	Farm machinery and equipment	112	160
357	Office machinery	146	335
351, 3–6, 8, 9	Miscellaneous machinery	1,233	1,760
36	Electrical machinery, equipment, and supplies	1,458	2,155
37	Transportation equipment	1,676	2,135
371	Motor vehicles and equipment	719	890
372	Aircraft and parts	642	780
373	Ship and boat building	239	325
374, 5, 9	Railroad and other transportation equipment	76	140
38	Instruments and allied products [3]	401	530
381–6, 194	Instruments and fire control	372	490
387	Watches and clock devices	29	40
39	Miscellaneous manufacturing	407	490
20–23, 26–31	Nondurable goods manufacturing	7,443	8,665
20	Food and kindred products	1,803	1,780
201	Meat products	322	335
202	Dairy products	317	240
203	Canning, preserving, and freezing	245	290
204	Grain mill products	131	135
205	Bakery products	312	270
208	Beverage industries	218	250
206, 7, 9	Other food products	258	260
21	Tobacco manufactures	92	70
22	Textile mill products	914	940
23	Apparel and related products	1,232	1,585

See footnotes at end of table.

Table 2. Total national employment by industry, 1960 and projected 1975—Continued

(In thousands)

SIC code	Industry	[1] 1960	[1] 1975
26	Paper and allied products	593	745
261–3, 6	Pulp, paper, and paperboard mills	287	295
265	Paperboard containers and boxes	175	230
264	All other paper products	131	220
27	Printing, publishing and allied products	1,036	1,245
28	Chemicals and allied products	829	1,120
2823, 4	Synthetic fibers	70	130
283	Drugs and medicine	107	165
285	Paints, varnishes, and related products	63	75
281, 2821, 2 284, 6, 7, 9	Other chemicals	589	750
29	Petroleum refining and related industry	209	170
291	Petroleum refining	175	130
295, 9	Other petroleum and coal products	34	40
30	Rubber and miscellaneous plastic products	375	670
301–3, 6	Rubber products	254	305
307	Miscellaneous plastic products	121	365
31	Leather and leather products	360	340
311	Leather tanning and finishing	33	30
313, 4	Footwear, except rubber	256	235
312, 5–7, 9	All other leather products	71	75
E (40–49)	Transportation, communication, and public utilities	4,508	5,340
40–47	Transportation	2,758	3,040
40	Railroad transportation	863	555
41	Local and suburban transit and interurban passenger transportation	378	395
411, 3–5, 7	Local and interurban except taxis	236	275
412	Taxis	142	120
42	Motor freight transportation and storage	976	1,270
421, 3	Trucking	884	1,175
422	Warehousing	92	95
44	Water transportation	222	245
45	Transportation by air	205	415
46	Pipelines	24	15
47	Transportation services	90	145
48–49	Communication and public utilities	1,750	2,300
48	Communication	826	1,155
481	Telephone	692	970
482, 9	Telegraph	42	40
483	Radio and television	92	145
49	Electric, gas, and sanitary services	924	1,145
491–3, 6	Electric, gas, and steam	639	685
494, 7	Water and irrigation	118	210
495	Sanitary services	167	250
F (50–59)	Wholesale and retail trade	13,210	16,870
50	Wholesale trade	3,161	4,220
501	Motor vehicles and equipment	226	360
502	Drugs and chemicals	181	250
503	Dry goods and apparel	136	170
504	Groceries and related	517	550
506, 7	Electrical goods, plumbing and heating supplies	363	555
508	Machinery and equipment	502	880
505, 9	Farm produce and miscellaneous	1,236	1,455
52–59	Retail trade	10,049	12,650
52	Building materials, hardware, and farm equipment	654	565
53	General merchandising	1,594	2,495
533	Limited price stores	334	320
53 except 533	Other general merchandise	1,260	2,175
54	Food and drug stores	1,769	2,045
55	Automobile dealers and gas stations	1,530	1,975
55 except 554	Automobile dealers	873	1,170
554	Gas stations	657	805

See footnotes at end of table.

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Table 2. Total national employment by industry, 1960 and projected 1975—Continued

(In thousands)

SIC code	Industry	[1] 1960	[1] 1975
56	Apparel and accessories	704	720
57	Furniture, etc.	508	535
58	Eating and drinking places	1,992	2,810
59	Miscellaneous retail stores	1,298	1,505
591	Drug stores	412	495
59 except 591	Other retail stores	886	1,010
G (60–67)	Finance, insurance, and real estate	2,832	4,040
60, 61, 62, 67	Finance	1,081	1,720
60, 61	Banks and credit agencies	937	1,480
62, 67	Stock brokers and investment companies	144	240
63, 64	Insurance	1,076	1,425
65, 66	Real estate [4]	675	895
H (70, 72, 73, 75, 76, 78–82, 84, 86, 88, 89)	Services	14,508	25,240
88	Private household	2,301	2,050
H (70, 72, 73, 75, 76, 78–82, 84, 86, 89)	Services, except private households	12,207	23,190
70	Hotels and other lodging places	679	1,165
72	Personal services	1,403	1,810
721, 7	Laundry, cleaning, and valet services	662	700
722–6, 9	All other personal services	741	1,110
73	Miscellaneous business services	867	2,245
731	Advertising	119	135
732–6, 9	Other miscellaneous business services	748	2,110
75	Automobile repair services and garage	403	575
76	Miscellaneous repair services	281	325
78, 79	Entertainment and recreation	502	950
78, 792	Motion pictures and theaters	196	240
793, 1, 4	Miscellaneous entertainment and recreation	306	710
80	Medical and other health services [5]	2,769	5,290
806	Hospitals	1,803	3,250
80 except 806	Other medical and health services	966	2,040
81	Legal services	291	455
82, 84	Educational services	3,572	7,675
86	Nonprofit membership organizations	941	1,750
866, 7	Welfare and religious	638	1,340
861–5, 9	Other nonprofit	303	410
89	Miscellaneous services	499	950
891	Engineering and architectural	242	455
893	Accounting and bookkeeping	160	270
892, 9	All other professional services	97	225
I (91–94)	Public administration [6]	3,209	5,025
91	Postal services	568	800
94	Other Federal public administration	1,257	1,625
92	State government	416	800
93	Local government	968	1,800

[1] These figures replace those published in *Tomorrow's Manpower Needs*, vol. IV, appendix table C. The 1960 employment figures were adjusted to exclude 14 and 15 year olds in order to be consistent with the age limit of labor force concepts which were raised to 16 years of age from 14 years. In 1975, in addition to the adjustment for 14 and 15 year olds, the figures were also revised to agree with the revised estimate of 1975 total employment.

[2] Includes construction employment in government agencies.

[3] Includes employment in ordnance (SIC 194).

[4] Includes employment in combination of real estate, insurance, loans, and law offices (SIC 67).

[5] Includes medical and other health services in government agencies.

[6] Includes public administration employment only. Government agencies engaged in educational and medical services and in activities commonly carried on also by private enterprises, such as transportation and manufacturing, are classified in the appropriate industrial category.

Section II. A Procedure for Developing State (Area) Total Employment Estimates by Industry for Base and Target Years

The use of the national industry-occupation matrices in developing State (or local) projections of occupational employment, requires that the State (area) based period and target year industry employment estimate be on a total employment basis, i.e., that they cover all classes of workers (wage and salary, self-employed, unpaid family workers, and government workers) and follow a one person one job employment concept. While the procedures are briefly outlined in volume I of Tomorrow's Manpower Needs, Bulletin 1606, a number of users of Tomorrow's Manpower Needs, Bulletin 1606 have encountered difficulties in preparing such estimates, especially in developing estimates for the nonwage and salary components and in reconciling the industry estimates and projections with independently derived labor force estimates.

In developing total employment estimates and projections by matrix industry sectors there are four basic steps required:

1. Develop an annual historical series of wage and salary employment at least at the level of industry detail used in the national matrix.[3]
2. Project the wage and salary employment to the target year, as outlined in volume I of Tomorrow's Manpower Needs, Bulletin 1606. Combine, as needed, the projections of employment into the detail of each matrix industry.
3. Develop base year (1960) estimates of total employment for each matrix industry. [4]
4. Develop target year (1975) total employment estimates for each matrix industry.

The purpose of the following section of this supplement is to outline one of several possible alternatives for accomplishing steps 3 and 4. Procedures for preparing projections of wage and salary employment by industry (step 2) are presented in volume 1 of Bulletin 1606.

Step 3: Developing base year total employment estimates for each matrix industry

I. Calculate "discrepancy."

A. Table 3 illustrates the relationship between the Census total employment and the BLS wage and salary employment concepts. Follow the steps indicated in table 3 and the footnotes.

The following sources will provide data for preparing table 3:

1. Labor force, Armed Forces, civilian labor force, and unemployment data for 1960 are available for each State in U.S. Department of Commerce, Bureau of the Census, U.S. Census of Population, 1960, Detailed Characteristics, PC(1)D, table 115.
2. Class of worker estimates (specifically, self-employed workers, and unpaid family workers) are contained in table 129, volume I, Census of Population, 1960, "Characteristics of the Population," for each State.
3. Federal Government employment: Federal Government employment is available from State Employment Security ES 202 records.
4. State and local government employment:

U.S. Department of Commerce, Bureau of the Census, Census of Governments, 1957, volume III, No. 2 Compendium of Public Employment (data also available for individual States in volume VII).

U.S. Department of Commerce, Bureau of the Census, Census of Governments, 1962, volume III, No. 2 Compendium of Public Employment (data also available for individual States in volume VII).

U.S. Department of Commerce, Bureau of the Census, State Distribution of Public Employment in 1960, G-GE60-No. 1.

1961 G-GE61-No. 1
1962 G-GE62-No. 1
1963 G-GE63-No. 1
1964 G-GE64-No. 1

[3] In order to most effectively use the national matrix, final State base estimates and projection of industry employment should be in the same industry detail as the matrix. Table 4 of this report identifies in terms of the SIC, each matrix industry. However, in instances where national wage and salary projections are available (table 1) and the industry is especially important to the State, it may be beneficial to prepare the State wage and salary projections at a more detailed industry level than that used in the national matrix, and then sum to the matrix industry level.

[4] In addition to the 1960 base period, estimates for 1967(70) may also be prepared in order to utilize the 1967(70) national matrix to update base period (1960) occupational estimates to a more recent period.

U.S. Department of Commerce, Bureau of the Census, Government Employment/GE No. 2. Public Employment in 1965.

1966 GE No. 4 1966
1967 GE No. 1 1967
1968 GE No. 1 1968

State and local government employment, by State, is presented in terms of "all employees" and "full-time equivalent employees" (employment by State and function is provided in terms of full-time equivalent employees only). For calculating the discrepancy, use the "all employees" concept.

NOTE: Employment Security Report ES 202, and the Censuses of Government and the State Distributions of Public Employment are recommended as sources of employment data for Federal, State, and local government because these sources probably contain more accurate data on government employment than the Census of Population, 1960. Moreover, these sources can provide annual employment series for use in projecting government employment (step 4).

5. State employment in Agriculture is provided in table 129, Census of Population, 1960.[5] However, because employment in agricultural services is not provided separately from the Census category "agriculture," analysts should adjust this total by reducing employment in agriculture by the number of wage and salary workers employed in agricultural services. (Employment in agricultural services, forestry and fisheries is included in the services sector in the BLS Wage and Salary employment series.)

6. State domestic employment is the wage and salary worker component of the "Private Households" industry shown in the 1960 Census of Population.[6] (Domestics who are self-employed or working as unpaid family workers have been covered in paragraph 2.)

7. Compute "net commutation" from table 132, Census of Population, 1960, "Characteristics of the Population," for the subject State, and for contiguous States. For example, for Kansas; Kansas, Colorado, Missouri, Nebraska, and Oklahoma would be used. Use col. 6, "private wage and salary workers, number."

8. Compute "dual jobholders" by taking 5.0 percent of BLS Wage and Salary Employment in the State for 1960.

SOURCE: Handbook of Labor Statistics 1969, table 35, Nonagricultural industries wage and salary workers, percent of total employed, May of 1966.

This approach assumes that the incidence of "dual jobholding" in a State is about the same as in the country as a whole. However, the actual extent of dual jobholding in a State is related to its mix of industries and the nature of its population, both of which may differ considerably from that of the Nation. In paragraph 2F, a more accurate measure of dual jobholding is probably obtained because the procedure accounts for the industry mix within a State. Analysts should consider adjusting this estimate of dual jobholders if the results obtained from paragraph 2F are considerably different from 5.0 percent of the wage and salary workers in the State.

9. Compute "with a job but not on payroll" by taking 2.0 percent of BLS nonagricultural wage and salary employment, 1960.

SOURCE: Handbook of Labor Statistics 1969, table 25 (1.1 million workers not paid 1960, ÷ 54.2 million, BLS wage and salary employment 1960 = 2.0 percent).

B. Create a table similar to table 1, with the appropriate numerical values included: Label it, work force/labor force reconciliation 1960.

II. Distribute the difference between BLS wage and salary employment and total employment to the appropriate matrix industries.

A. Self-employed and unpaid family workers (except in agriculture)

Table 4 illustrates the relationship between the Intermediate Industry Classification system, used in the Census of Population, 1960, and the Matrix Industry Classification system. Self-employed workers and unpaid family workers (except in agriculture), may be allocated to the appropriate matrix industries on the basis of these relationships.

When a Census-defined industry includes more than one matrix industry, and the relative importance of self-employed workers in each of the matrix industries is not known, prorate the Census industry totals to each of the matrix industries on the basis of wage and salary worker employment levels. (An indication of the importance of self-employed and unpaid family workers in each matrix industry can be gained from table D, volume IV, Tomorrow's Manpower Needs, Bulletin 1606, Ratio of Total National Employment to Wage and Salary Workers. Large ratios in 1960 would indicate high concentrations of self-employed and unpaid family workers, except, of course, for those industries having large numbers of government workers, such as shipbuilding.)

Self-employed and unpaid family workers classified in "Industry not reported" may be prorated among all matrix industries based on the importance of self-employed and unpaid family workers in each matrix industry (as determined above).

[5] U.S. Department of Commerce, Bureau of the Census, U.S. Census of Population, 1960; Detailed Characteristics, PC(1)D.
[6] Ibid., table 129.

B. Employment in State and local government

Employment in nonpublic administration functions of State and local government (e.g., highways, hospitals) must be allocated to the matrix industries in which such activity occurs. Only employment in purely public administration functions should be allocated to "State government" or "local government."

Table 5, showing the relationship between government functions and the matrix industries, should be used in allocating State and local government employment. Prorate whenever necessary.

"Full-time equivalent employees" may be used in allocating nonpublic administration workers to matrix industries since the State Distribution of Public Employment, 1960, contains no information on employment of "all employees" by function; but, the difference between full-time equivalent employees and all employees should be allocated to State government and local government (Public Administration).

NOTE: Although these procedures are not ideal for developing precise levels of employment by matrix industry, the trends in employment may not be greatly affected by the use of the technique in most States. Trends rather than levels of employment are the most important factor determining future manpower requirements.

As an alternative to this technique, however, one State has recommended "blowing-up" the full-time employees, by function (1960), to the all employees total using information contained in the 1957 Census of Governments, Compendium of Public Employment, volume II, No. 2. Tables 13 and 14 in this publication display data on total employment and full-time employees, by type of government and function. The State (Kansas) computed ratios of the relationship between total employment and full-time employees, by function. Further adjustments were made by modifying the ratios (to reflect 1960), using changes in the relationships between the 1957 ratios and similar ratios computed for 1962. Finally, the adjusted ratios were applied to full-time employees, 1960, by function, and the results were "forced" to the all employees total.

C. Employment in Federal Government

Employment in nonpublic administration functions of the Federal Government must be allocated to the appropriate matrix industries. Use table 6, which illustrates the relationship between Federal Government employment (as classified in ES 202 reports) and matrix industry categories, for allocating nonpublic administration Federal Government employment among matrix industries. All other employment in Federal Government should be allocated to "other Federal public administration."

D. Domestic workers

Allocate domestic workers (except self-employed) to the matrix industry, "private household." (Self-employed domestic workers were allocated to the "private household" industry in paragraph 2A.)

E. Agriculture

Allocate employment in agriculture (as developed in paragraph 1A5) to the matrix industry, "agriculture."

F. Dual jobholders

Dual jobholders should be subtracted from each industry's wage and salary employment for the base year. Employment for dual jobholders should be reflected only in the industries where they hold primary jobs. Table 7, col. 2, shows the proportions that wage and salary workers should be reduced in each matrix industry. For example, construction industry employment should be reduced by 3.8 percent. (Col. 2 indicates the proportion of employment in each industry composed of secondary jobs for workers holding more than one job.)

When the major industry category in table 7 includes more than one matrix industry, reduce each of the matrix industries by the proportion indicated, unless, of course, information on the detailed industry of employment of dual jobholders in the State is known.

G. The employment effects of "net commutation," "with a job but not on payroll," and "discrepancy" are the only categories that have not been considered.

Unless information on the industrial distribution of these workers is known, the analyst may "force" the matrix industry employment levels to the "resident employed" totals in table 3 for the State as follows:

1. Sum the employment in each matrix industry after following the steps in paragraphs 2A through 2F, above.

2. Subtract the sum from the "resident employed," table 3.

3. Insure that the remainder in paragraph 2G2 is equal to net commutation, plus with a job but not on payroll, plus discrepancy, shown in table 3, for the State.

4. Divide the sum result of paragraph 2G1 into "resident employed," table 3, and obtain a 100+ ratio.

5. Multiply each matrix industry employment, summed in paragraph 2G1, by the proportion computed in paragraph 2G4.

The result is a consistent series of total employment, by matrix industry, in the base year that sums to "resident employed" in table 3.

Table 3. State workforce–labor force reconciliation worksheet

A. Labor force	
(minus) Armed Forces	
B. Civilian labor force	
(minus) Unemployed	
C. Resident employed	
(minus) Agriculture	
(minus) Self-employed workers (except in agriculture)	
(minus) Unpaid family workers (except in agriculture)	
(minus) Domestics (except self-employed)	
(minus) Government	
D. Census NON-AG private wage and salary workers	
E. BLS NON-AG private wage and salary workers	
F. Difference (D minus E)	
1. Net commutation [1]	
2. Dual jobholders [2]	
3. With a job but not on payroll [3]	
4. Discrepancy [4]	

[1] If more residents of a State work outside the State's borders than residents of neighboring States work inside the State's borders E will tend to be lower than D.

[2] Dual jobholders tends to make E higher than D.

[3] With a job . . . tends to make D higher than E.

[4] This includes, in addition to the effects of collecting data using different concepts, labor turnover and many other factors. For example, if a person changes jobs in the survey week and appears on more than one payroll record, he will be counted twice in the work force. For a complete discussion of the concepts underlying the Current Population Survey (persons) and the Current Employment Survey (jobs) see "Comparing Employment Estimates," *Monthly Labor Review*, December 1969, p. 9. Also 1960 Census data contained a significant undercount of approximately 3.1 percent that has affected subsequent labor force estimates. For a more complete discussion of this problem, see "Effects of the Census Undercount on Labor Force Estimates." Special Labor Force Report No. 105, U.S. Department of Labor, Bureau of Labor Statistics.

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Table 4. Relationship between national matrix industry classification and Census of Population 1960 intermediate industrial classification system as used in table 129

Census industry designation	National matrix industry designations [1]
Agriculture	Agriculture
Forestry and fisheries	Forestry
	Fisheries
Mining	Metal mining
	Coal mining
	Crude petroleum and natural gas
	Quarrying and nonmetallic mining
Construction	Construction industry
Logging	Logging camps and contractors
Sawmills, planning mills, mill work, and miscellaneous wood products	Lumber and wood products, excluding furniture
	Sawmills, millwork, and miscellaneous wood products
Furniture and fixtures	Furniture and fixtures
Stone, clay, and glass products	Glass and glass products
	Cement, concrete, and plaster
	Structural clay products
	Pottery and related products
	Miscellaneous nonmetallic mineral and stone products
Primary iron and steel industries	Blast furnaces and steel works
	Other primary metals industries
Primary nonferrous industries	Primary nonferrous metals
Fabricated metal industry (special metal not included)	Fabricated metal products
Machinery, except electrical	Farm machinery and equipment
	Office machinery
	Miscellaneous machinery
Electrical machinery, equipment, and supplies	Electrical machinery, equipment, and supplies
Motor vehicles and motor vehicle equipment	Motor vehicles and equipment
Aircraft and parts	Aircraft and parts
Other transportation equipment	Ship and boat building
	Railroad and other transportation equipment
All other durable goods	Instruments, except clocks
	Watches and clock devices
	Miscellaneous manufacturing
Meat products	Meat products
Bakery products	Bakery products
Other food industries	Dairy products
	Canning, preserving, and freezing
	Grain mill products
	Beverage industries
	Other food products
Knitting mills	Textile mill products
Yarn, thread, and fabric mills	Textile mill products
Other textile mill products	Textile mill products
Apparel and other fabricated textile products	Apparel and related products
Paper and allied products	Pulp, paper, and paperboard mills
	Paperboard containers and boxes
	All other paper products
Printing, publishing, and allied industries	Printing, publishing, and allied products
Chemicals and allied products	Synthetic fibers
	Drugs and medicine
	Paints, varnishes, and related products
	Other chemicals
Petroleum and coal products	Petroleum refining
	Other petroleum and coal products
Rubber and miscellaneous plastics products	Rubber products
	Miscellaneous plastics products

See footnote at end of table.

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Table 4. Relationship between national matrix industry classification and Census of Population 1960 intermediate industrial classification system as used in table 129—Continued

Census industry designation	National matrix industry designations[1]
Footwear, except rubber	Footwear, except rubber
All other nondurable goods	Tobacco manufactures
	Leather tanning and finishing
	All other leather products
Not specified manufacturing industries [2]	(Prorate)
Railroads and railway express service	Railroad transportation
Street railways and bus lines	Local and interurban, except taxis
	Taxis
Trucking service and warehousing	Trucking
	Warehousing
Water transportation	Water transportation
Air transportation	Transportation by air
All other transportation	Pipelines
	Transportation services
Communications	Telephone
	Telegraph
	Radio and television
Electric and gas utilities	Electric, gas, and steam
Water supply, sanitary services, and other utilities	Water and irrigation
	Sanitary services
Wholesale trade	Motor vehicles and equipment
	Drugs and chemicals
	Dry goods and apparel
	Groceries and related
	Electrical goods, plumbing, and heating supplies
	Machinery and equipment
	Farm produce and miscellaneous
(Retail trade)	(Retail trade)
Food and dairy products stores, and milk retailers	Food and dairy stores
General merchandise and limited price variety stores	Limited price stores
	Other general merchandise
Apparel and accessories stores	Apparel and accessories
Furniture, home furnishings, and equipment stores	Furniture, etc.
Motor vehicles and accessories retailing	Automobile dealers
Gasoline service stations	Gas stations
Drug stores	Drug stores
Eating and drinking places	Eating and drinking places
Hardware, farm implement, building material retail	Building materials, hardware, and farm equipment
All other retail trade	Other retail stores
Banking and other finance	Finance
	Banks and credit agencies
	Stock brokers and investment companies
Insurance and real estate	Insurance
	Real estate
Business services	Advertising
	Other miscellaneous business services
Automobile repair services and garages	Automobile repair services and garages
Miscellaneous repair services	Miscellaneous repair services
Private households	Private household
Hotels and lodging places	Hotels and other lodging places
Laundering, cleaning, and dyeing services	Laundry, cleaning, and valet services
All other personal services	All other personal services
Entertainment and recreation services	Motion pictures and theaters
	Miscellaneous entertainment and recreation
Medical and other health services	Hospitals
	Other medical and health services

See footnotes at end of table.

Table 4. Relationship between national matrix industry classification and Census of Population 1960 intermediate industrial classification system as used in table 129—Continued

Census industry designation	National matrix industry designations [1]
Educational services' government	Educational services
Educational services' private	Educational services
Welfare, religious, and membership organizations	Welfare and religious
	Other nonprofit
Legal, engineering, and miscellaneous professional services	Legal services
	Engineering and architectural
	Accounting and bookkeeping
	All other professional services
Postal services	Postal services
Federal public administration	Other Federal public administration
State and local public administration	State government
	Local government
Industry not reported [3]	(Prorate)

[1] From *Tomorrow's Manpower Needs*, Bulletin 1606, vol. IV, appendix C, p. 19–22.
[2] Employment in "not specified manufacturing industries" may be prorated to other manufacturing industries on the basis of employment levels.
[3] Employment in "industry not reported" may be prorated to other industries on the basis of employment levels.

Table 5. Relationship between the functions of State and local government and the matrix industries

Census of government	National matrix industry
1. Education	Educational services
2. Highways	Construction
3. Hospitals	Hospitals
4. Health	Other medical and health services
5. Sewerage	Sanitary services
Sanitation other than sewerage	Sanitary services
6. Airports	Air transportation
7. Water transport and terminals	Water transportation
8. Local libraries	Education services
9. Local utilities	
a. Water supply	Water and irrigation
b. Electric power	Electric, gas, and steam
c. Transit	Local and interurban, excluding taxis
d. Gas supply	Electric, gas, and steam
10. State liquor stores	Other retail stores

Table 6. Relationship between nonpublic administration functions of the Federal Government and matrix industries

UI industry title	UI Code	Matrix industry
Agricultural services, hunting and trapping	9107	Agriculture
Forestry	9108	Forestry
Fisheries	9109	Fisheries
Metal mining	9110	Metal mining
Ordnance and accessories	9119	Fabricated metals
Textile mill products	9122	Textile mill products
Apparel	9123	Apparel and accessories
Printing and publishing	9127	Printing and publishing
Chemical and allied products	9128	Chemicals and allied products
Leather and leather products	9131	Leather products
Transportation equipment	9137	Ship and boat building
Motor freight	9142	Trucking
Water transportation	9144	Water transportation
Transportation by air	9145	Air transportation
Communication	9148	Communications
Electric, gas, and sanitary services	9149	(Split between electric, gas and steam, and sanitary services)
Retail trade		
General merchandise	9153	General merchandise
Food	9154	Food and dairy stores
Eating and drinking	9158	Eating and drinking places
Miscellaneous retail stores	9159	Other retail stores
Banking	9160	Banks and credit agencies
Credit agencies	9161	Banks and credit agencies
Security/commodity brokers	9162	Stock brokers and investment
Insurance carriers	9163	Insurance
Insurance agents	9164	Insurance
Real estate	9165	Real estate
Hotels, rooming houses	9170	Hotels and other lodging places
Personal services	9172	All other personal services
Miscellaneous business services	9173	Other miscellaneous business services
Motion pictures	9178	Motion pictures and theaters
Amusement and recreation	9179	Miscellaneous entertainment and recreation
Medical and other health services	9180	(Split between hospitals and other health services)

Table 7. Percent distribution of workers with more than 1 job, by industry group of secondary jobs, May 1965

Industry and class of worker	Persons with 2 or more jobs	
	All persons[1]	Proportion of wage and salary workers in non-agricultural industries having primary jobs in other industries
All industries	100.0	
Agriculture	20.9	
Wage and salary workers	4.4	
Self-employed workers	16.5	
Unpaid family workers	([2])	
Nonagricultural industries	79.1	
Wage and salary workers	63.6	
Forestry, fisheries, and mining	.5	3.5
Construction	3.8	3.8
Manufacturing	7.3	
Durable goods	3.5	1.2
Nondurable goods	3.8	1.8
Transportation and public utilities	5.1	4.4
Wholesale and retail trade	15.0	
Wholesale	1.7	3.0
Retail	13.3	
Eating and drinking places	3.1	6.5
Other retail trade	10.1	5.3
Services and finance	26.6	
Finance, insurance, and real estate	4.1	5.2
Business and repair services	2.5	6.5
Private households	3.4	4.8
Personal services, except private households	1.9	4.7
Entertainment and recreation	3.8	29.5
Educational services	4.4	3.9
Professional services, except education	6.5	5.5
Public administration	5.4	7.7
Postal services	1.3	
Other public administration	4.1	5.1
Self-employed workers	15.5	
Unpaid family workers	([2])	

[1] U.S. Department of Labor, Bureau of Labor Statistics, Special Labor Force Report No. 63, *Multiple Jobholders in May 1965*, a *Monthly Labor Review* Reprint from the February 1966 issue.

[2] Persons whose only extra job was an unpaid family worker were not counted as dual jobholders.

Step 4: Developing target year total employment estimates for matrix industry

I. Prepare "civilian labor force" and "resident employed" estimates for the target year (1975). These estimates will eventually be a part of a "table 1" balance sheet for 1975, similar to the table 1 produced for 1960.

A. Determine the expected State "labor force" in 1975. One method of doing this is to take the midpoint of the 1970 and 1980 labor force estimates contained in Tomorrow's Manpower Needs, Bulletin 1606, volume I, appendix B.[7]

NOTE: States may use population and labor force projections from other sources. The advantage of the State projections made by the Bureau of Census and the Bureau of Labor Statistics is that in the aggregate they are consistent with national population and labor force projections. The major disadvantage of these projections (for our purpose) is that they do not reflect all the factors that will influence a State's population and labor force in the future. For example, they do not fully reflect expected changes in industrial or income growth in a State. Both of these factors will have an effect on the growth of a State's population and labor force. (These projections partially account for changes in such factors, because they are based on historical data that reflect past adjustments to industrial and income growth. Moreover, population projections made by a State may also reflect these same limitations, among others.) Section III of this report is concerned specifically with the problem of relating aggregate employment projections and labor force projections. At this point in the procedure, however, States should use the labor force projections that they feel are the most useful as a tentative step in developing a final "table 1" balance sheet for the target year.

B. Subtract the expected State resident U.S. Armed Forces from the "labor force" to derive the civilian labor force.

The national manpower projections assume a peacetime armed force of 2,700,000 in 1975, about the same size as in 1964. To determine the likely resident Armed Forces in 1975, determine the proportion of the total Armed Forces residing in the State in 1960, and assuming a similar proportion in 1975, multiply the ratio percent by 2,700,000. (Use the Census of Population, 1960, "Characteristics of Population," by State, table 115, for information on Armed Forces. Total average Armed Forces personnel in 1960 was 2,514,000.)

NOTE: A State may require a set of assumptions underlying employment projections somewhat expanded over those used at the national level and described in Tomorrow's Manpower Needs, Bulletin 1606, vol. IV, appendix A, p. 4. For example, there are other assumptions about the Armed Forces that a State may want to make that would be meaningless at the national level. Lower levels of Armed Forces personnel will affect employment in each State differently. States having large numbers of Armed Forces stationed within their borders may experience sharper downward pressures on employment in industries primarily serving the local population (e.g., retail and wholesale trade, construction, and educational services) than would other States, less dependent upon defense personnel. Moreover, as U.S. involvement in Viet Nam declines, the characteristics of goods and services purchased for defense purposes will change, affecting each State differently. Although the expected changes in goods and services purchased for defense are reflected in the national industry projections, States may want to modify industry employment projections (derived using national projections) to take account of the types of products produced for military purposes by the local defense-related industries. For example, aircraft plants that produce conventional armaments may want to be adjusted downward from "mechanically" derived employment levels to account for expected changes in defense procurement. Such an adjustment should be explicitly noted, along with the national assumptions, when transmitting employment projections to State planners in education and training programs.

C. The national manpower projections assume a 3.0 percent unemployment rate in 1975. (See Tomorrow's Manpower Needs, volume IV, p. 4, for a discussion of this assumption.) The unemployment rates in various States, however, will differ relative to that in the Nation. For example, California typically has a "high" unemployment rate relative to the country because of extensive immigration.

A State may estimate the effect of a national 3.0 percent unemployment rate by comparing the April 1960 rate given in the Census of Population, with the rate at the national level in April 1960 (5.1 percent). For example, Kansas had an unemployment rate of about 4.1 percent in April 1960. Therefore, a 2.5 percent unemployment rate in Kansas in 1975 may be consistent with a national rate of 3.0 percent.

NOTE: The low unemployment rates reflect the purpose for which manpower projections are made—to develop plans to utilize human resources to the fullest extent possible, given our political and social values. A higher rate of unemployment may not reflect national goals, and would not be suitable for policy and program planning.

D. Multiply the assumed unemployment rate in 1975 by the civilian labor force; subtract the resultant from the civilian labor force, leaving the "resident employed."

II. Develop estimates of self-employed workers and unpaid family workers by matrix industry for the target year (1975). (The sum of the estimates should be entered into the table 3 balance sheet for 1975.)

NOTE: The following procedure ties the rates of change in the importance of self-employed and unpaid family workers in a State, to the expected change in the rates at the national level, for those industries in which self-employed workers are important—construction, trade, and services. For other industries, the same number of self-employed and unpaid family workers in 1960 may be estimated for 1975.

A. From table 129, Census of Population, 1960, "Characteristics of the Population," develop ratio relationships of self-employed and unpaid family workers to wage and salary workers, by industry, first grouping the industries in the manner indicated in table 8.

[7] The Bureau of Labor Statistics is developing labor force projections based on the Bureau of Census' latest long range projections of population by State, contained in p. 25, No. 375, Revised Projections of Population of States, 1970-85. These projections will be published in the Monthly Labor Review when completed.

B. Modify the ratios developed in paragraph 2A, by the percent factor in col. 3, table 8, "Percent change in proportion 1960 to 1975."

C. Multiply the modified ratios developed in paragraph 2B, by the wage and salary employment in 1975, for the respective groups of matrix industries. (Table 4 illustrates the relationship between Census' "intermediate" classification system and the matrix industries.)

The result of this procedure is the expected self-employed and unpaid family worker employment in the target year for the matrix industries classified in each group of "intermediate" industries.

D. Prorate the employment of self-employed and unpaid family workers derived in paragraph 2C to each matrix industry, based on the importance of each industry as an employer of self-employed workers (as determined in step 3, paragraph 2A).

E. For matrix industries which are not included in the combination of census industries used above (except agriculture and private household), estimate for 1975 the same number of self-employed and unpaid family workers as in 1960. (For most of these industries, self-employed and unpaid family workers are not an important component of employment.)

NOTE: Preliminary comparisons of the rates of change in employment of self-employed and unpaid family workers by industry and State between 1950 and 1960 indicate that there may be significant differences. These differences may result from variations in degree and rate of urbanization and historical tradition, among other factors. As a further step in the development of reliable projections for self-employed and unpaid family workers, the procedure outlined above may be improved by "localizing" the national rates of change in the importance of these workers. This can be performed by determining how the rates of change in a State, by industry, differed from that of the Nation between 1950 and 1960, and then modifying the national rates of change, between 1960 and 1975, to reflect the local rates.

For example, assume that the proportion of self-employed and unpaid family workers in construction dropped 10 percent for the United States between 1950 and 1960, and for Kansas, only 5 percent (Census of Population, 1950 and 1960). Therefore, the factor used by the analyst in paragraph 2B, may be 10 percent for construction, rather than the 20 percent expected at the national level (table 8).

If a procedure to "localize" the national ratios is not used, analysts are cautioned to review the results of paragraph 2C closely to make certain that they are reasonable.

III. Project employment in government by matrix industry for the target year (1975). (The sum of these projections should be entered into the table 1 balance sheet for 1975.)

A. State and local government

1. Data from the State Distributions of Public Employment and the Census of Government, previously referenced, can be used to develop a consistent series of employment in State and local government, by function, for the period 1957 through 1968.

2. Employment in each function may be plotted yearly, and a line of average relationship drawn (or computed) for the historical data, and projected.

NOTE: An alternative method for projecting employment in people-oriented functions (e.g., education) is to determine the historical relationship between employment in the function and the subject population group; project the changing relationship to the target year, and relate the results to the expected subject population in 1975. For example, employment in local elementary and secondary schools may be related to the population, ages 6 to 18.

The results of this method may be modified to reflect the expected employment effects of anticipated changes in public priorities at both the national and State levels. Such changes may become part of the specific assumptions underlying the projections that were discussed in terms of defense in the note following paragraph 1C.

3. Distribute employment in State and local government to the appropriate matrix industries, using the same procedure described in Step 2, paragraph 2B.

B. Federal Government

1. Data from the UI program can provide a basis for developing and projecting employment in Federal Government by function.

2. Develop historical series of employment, by function, for each nonpublic administration and public administration function of the Federal Government. Employment in each function may be plotted yearly, and a line of average relationship drawn or computed for the historical data and extended to 1975.

3. Distribute the results of the procedure described in paragraph B1 to the respective matrix industries using the same procedure described in Step 2, paragraph 2C.

IV. Project employment of domestic workers by matrix industry. (Enter the result on the table 3 balance sheet for 1975.)

Determine the ratio of employment in the private household industry in the State to national employment in the private household industry in 1960. Multiply the ratio by the projection of national employment in private households in 1975; the result is an estimate of employment in the private household industry, for the State, in 1975.

For example, from table 129, Census of Population, 1960, "Characteristics of the Population," part 18,

Kansas, male and female employment in the private household industry in 1960 was 19,491. Tomorrow's Manpower Needs, Bulletin 1606, volume IV, p. 21, shows that employment in the private household industry in the U.S. in 1960 was 2,554,000. Thus, 0.0076 percent of total private household employment occurred in Kansas in 1960. Apply the same ratio percent to the estimate of national employment in private households in 1975, 3,175,000 (Tomorrow's Manpower Needs, Bulletin 1606, volume IV, p. 21); the result is an estimate of 24,448 workers in the private household industry for Kansas in 1975.

V. Project employment in agriculture by matrix industry. (Enter the result on the table 3 balance sheet for 1975.)

A. Each State has an annual series of employment in agriculture. Relate State employment to national employment in agriculture annually, and project the relationship to 1975. (National employment in agriculture is published in table A-1 of Employment and Earnings, U.S. Department of Labor, for any month.)

B. Multiply the derived factor by the national employment in agriculture in 1975 (Tomorrow's Manpower Needs, Bulletin 1606, volume IV, p. 19); the result is an estimate of employment in agriculture, 1975.

VI. Estimate the employment effects of "net commutation" "with a job but not on payroll" and "discrepancy." (Enter the estimates into the table 3 balance sheet for 1975.)

A. Net commutation may be projected by determining the proportion that "net commutation" was of "resident employed" in 1960 and assuming that the same proportion will hold in the year 1975.

NOTE: The weakness of this procedure is obvious and does not require elaboration. Any information on relative employment growth rates about the State's borders in the 1960-70 period should be used to modify this projection.

B. "With a job but not on payroll" should remain about 2.0 percent of nonagricultural wage and salary employment in the target year.

Compute "with a job. . ." by taking 2.0 percent of the projected total wage and salary employment in the target year.

C. The "discrepancy" between BLS nonagricultural wage and salary workers and derived Census nonagricultural wage and salary workers appears to be increasing slowly through the years as the labor force grows. State analysts may assume as a first approximation, however, that the discrepancy in 1975 shall be the same as in 1960.

D. Compare the total employment that results from summing the results of procedures in Step 4, paragraphs 1A through 6C with "resident employed" for 1975.

NOTE: At this point, the table 3 balance sheet may function as a focal point for the review and analysis of the projections of the major components of aggregate total employment. For example, table 1 may indicate that the "discrepancy" for 1975 is considerably larger than for 1960. It may first appear that the labor force projection—from which "resident employed" was derived—is too large (or too small). However, the techniques and procedures recommended and the judgments made in developing the total employment projections are not precise. The components of the total employment estimates should be reviewed before the adequacy of the estimate of "resident employed" can be ascertained. Perhaps several of the components, such as self-employed and unpaid workers, will require adjustments after the review.

E. If the actual "discrepancy" is less than 3 percent of "resident employed," force employment in each matrix industry to the "resident employed" total. The forcing procedure would be the same as that described in Step 3, paragraphs G1 through 5. The "forcing" process assumes that employment in each matrix industry shares the employment effects of the three concepts proportionally (i.e., in line with its employment level).

The result is a consistent set of total employment projections, by matrix industry, 1975.

F. If the difference between the total employment (paragraph 6D) and "resident employed" is more than 3 percent of "resident employed" (plus or minus), see section III.

Table 8. National percent change in self-employed and unpaid family workers as proportion of wage and salary workers between 1960 and 1975

Intermediate industry Census classifications	Proportion	Expected proportion	Percent change in proportion 1960 to 1975 [1]
	1960	1980	
Construction	26	19	−20
Logging			
Sawmills, planning mills, mill work, and miscellaneous wood products	15	17	+7
Printing, publishing, and allied industries	8	7	−13
Railroad and railway express service			
Street railways and bus lines			
Truck service and warehousing	8	8	No change
Water transportation			
Air transportation			
All other transportation			
Retail trade	25	16	−26
Banking and other finance	6	5	−20
Insurance and real estate	35	30	−10
Hotels and lodging places			
Laundering, cleaning, and dyeing services	52	38	−20
All other personal services			
Miscellaneous repair service			
Business services			
Legal, engineering, and miscellaneous professional services	33	14	−44
Automotive repair services and garages	55	37	−25
Entertainment and recreation services	19	15	−17
Medical and other health services			
Educational services, private	14	7	−36
Welfare, religious, and membership organizations			

1 Column cannot be precisely computed from colums 2 and 3. Base computations were carried to 2 decimal places, and the results rounded to whole numbers for this table.

Section III. Labor Supply and Demand in the Target Year

Aggregate total employment projections

The aggregate total employment projections developed using the procedures in section II may differ considerably from the resident employed total. The potential supply of labor may be out of balance with the potential demand for labor. At the national level, such an imbalance is resolved by forcing aggregate total employment to the level of potential supply—a procedure not unreasonable because the size and age structure of the future population is known and the labor force participation by specific groups of people changes slowly over time. At the State level, however, forcing employment to labor force levels is a questionable procedure, because of the extensive amount of labor and capital migration between States over time.

In reality, a State's potential labor supply interacts with potential industry growth, resulting in an accommodation between them. States, in a sense, are in competition with each other; the results of the competition determine those States that meet or surpass their potential for employment growth, given the historical trends in the growth of the labor force. Many factors, some capable of influence by a State, will determine the outcome of the competition; for example, the amount and quality of labor available to States (e.g., engineers, scientists and technicians produced by local universities), changes in the distance of States from major markets, technological changes affecting industrial material inputs, the social climate within States and the relative quality of State transportation systems are all important to the final outcome of the competition. Other factors, such as how active States (or regions) are in recruiting base industry (e.g., manufacturing), relative tax levels, and shifts in defense policy are all important to the outcome of the competition between States for industry and jobs.

(The goal of industrial development is pursued less diligently by some States. Such qualities as the maintenance of historical customs, traditions and quality of life are deemed more important than industrial growth per se by these States. As the awareness of the negative effects of industrial pollution and overall congestion become increasingly manifest, the goal of industrial development may increasingly take a secondary role in some States. Industrial development is also selectively pursued by some States. This objective may take the form of enticing into the State only new-technology firms with large components of white-collar workers.)

When the aggregate total employment projection (which would include the first approximation discrepancy from Step 4, paragraph 6C) differs by more than 3 percent from the resident employed total, as shown in the target year table 1 balance sheet, that a State analyst should: (1) Review the population and labor force projection, and the projection of resident employed, (2) review the procedures used to develop the projections of industry wage and salary workers and the other components of total employment. He should make sure that the results appear reasonable and that recent plant openings and closings are reflected in the projections. After completing this review, if there is still a large difference between potential aggregate demand and supply of labor, a judgment will have to be made. For example, if the total employment projection greatly exceeds the "resident employed" total and the State has evidenced recent strong growth in employment relative to its past or to other States in its region, an analyst perhaps should select a total employment level near the projection level, rather than at the potential supply level. Similarly, when the total employment projection is considerably less than the "resident employed" total, make the same kind of determination, given an evaluation of the same factors. (After deciding on an aggregate total employment, total employment by matrix industry must be "forced" to the aggregate level using the procedures described in Step 3, paragraphs G1 through 5.)

Regardless of the final determination, a State's policy makers should be made aware of employment projections that assume a population and labor force different from that currently being used for all types of functional planning. Such a situation should be highlighted, along with the underlying assumptions, when the projections are forwarded to the responsible policy and program planners.

Relationship between the "jobs" (work force) and "people" (labor force) concept.

Some area analysts have indicated an interest in projecting employment on the basis of potential jobs rather than labor supply. Projecting "jobs" (work force) instead of "people" (labor force) would require several modifications in the procedures in section II. Dual jobholders are counted only once under the labor force concept, but as many times a person is employed under the jobs concept. Moreover, the jobs concept would require an actual aggregate projection of (or accounting for) the "discrepancy." Projections of these categories of workers are not necessary under the labor force approach because employment is ultimately forced to a "resident employed" (supply) total.

Therefore, either or both a work force and a labor force approach may be used by the States. If the work force concept is used, however, suitable procedures must be developed for handling dual jobholders and for accounting for the aggregate employment effects of "discrepancy." Published results should clearly note which concept underlies the projections. Also, the problem of aggregate supply (labor force) is not solved when a work force approach is used. An aggregate job projection is implicitly (if not explicitly) related to a specific population and labor force level in the target year.

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